Product Brief

Intel® Xeon® Processor 3000 Sequence

Intel® Xeon® Processor 3000 Sequence-based Platforms

Entry-Level Servers with outstanding dependability, performance and value

Boost performance and energy efficiency with 45nm multi-core Intel® Xeon® processors

Take your business to new levels with server platforms based on the Intel® Xeon® processor 3000[1] sequence and the Intel® 3200 chipsets. Featuring Intel's 45nm next-generation processors based on Intel's enhanced core microarchitecture for entry-level servers that deliver a unique combination of trusted Intel® server technology and exceptional value for small businesses. Intel's enhanced core microarchitecture enables lower power consumption than previous generations of Intel® platforms based on Intel® Pentium® processors, resulting in lower operating costs and reduced fan noise. The faster 800 MHz DDR2 memory speed available with Intel 3200 chipset can offer higher performance than previous-generation Intel 3000 chipset.

Intel Xeon processor 3000 sequence-based entry-level servers are designed with utility and versatility in mind. They are ideal for small business owners looking for ways to grow business, manage operations more effectively and efficiently, and protect and secure one of their most important assets – information. Intel® Xeon® processor-based entry-level servers build in proven performance, manageability and reliability, allowing you to spend more time on moving your business forward.

Trust your company to Intel's proven server technology

With nearly 40 million Intel® processor-based servers shipped since 1996, and a 20-year track record of delivering enterprise-class performance, more companies trust their businesses to Intel processor-based servers. Intel processor-based entry-level servers give companies the reliability, performance, and tools they need to focus on their business instead of their computers.

Our entry-level server platforms are comprehensive solutions. We combine effective technologies, software, and industry alliances to give you servers optimized for your business with incredible value. Intel has used its new process technology to extend its Intel® Core™ microarchitecture and provide compelling price performance for value conscious customers. You can count on Intel to deliver superior quality and reliability to drive your business forward.

The Ideal Entry-level Server

Our entry-level server platforms with Intel Xeon processor 3000 series and the Intel 3200 chipsets are ideal for value-conscious organizations looking for their first server or small HPC cluster with a close eye on their budget. These platforms offer industry-leading performance coupled with Intel reliability to help drive your big ideas non-stop, and are dependable, efficient to set up and manage, provide trouble-free operation and help ensure that your operational needs are met at every stage of your business growth. Our entry-level server platforms integrate the most advanced technologies:

- Intel® Xeon® processor 3300[1] series or Intel® Xeon® processor 3100[1] series are based on Intel Core microarchitecture, with Intel® 64 Architecture[2] and 1333 MHz front-side bus. These processors deliver outstanding performance for today's business applications, capabilities to run a broad range of 32-bit and 64-bit applications, and plenty of headroom for growth for tomorrow.
- Power-efficient performance designed into the platform to help reduce operating costs while delivering higher performance than previous-generation Intel Pentium processor-based server platforms. Lower power consumption can also result in slower fans and quieter servers.
- The Intel® Xeon® processor L3360 provides a 30W reduction in thermal design power (TDP) at the same frequency as the Intel Xeon processor X3360. The Intel® Xeon® processor L3110 provides a 20W reduction in TDP at the same frequency as the Intel Xeon processor E3110. The lower TDP makes these processors ideal for building entry-level servers for thermally sensitive, space-constrained environments.
- Intel® Matrix Storage Technology quickly stores and retrieves data, while protecting one of your company's most important assets – information – with RAID 0, 1, 5, and 10 technology.
- PCI Express,* today's mainstream I/O technology, helps enable fast I/O transactions to assist peripherals to keep up with our high-performance processors and chipsets, and builds in scalability for the future. The Intel® 3210 chipset offers an additional PCI Express I/O for even more expansion possibilities.
- Intel® PRO/1000 PM/PL network connections provide gigabit Ethernet LAN connectivity for high-speed network access.
- Intel® Virtualization Technology[3] provides hardware assist to virtualization software, enabling your servers to support both 32-bit and 64-bit operating systems and applications on the same server. Implementing virtualization enables businesses to get the most out of server investment by running more applications on each server.
- Up to 8 GB of high-speed 800 MHz dual-channel DDR2 memory with Intel 3200 chipset keeps more data closer to the processor and helps eliminate slowdowns from memory bottlenecks.

Protect Your Critical Data

Platforms based on the Intel 3200 chipsets support Error Correction Code (ECC) memory for a high level of data integrity, reliability, and system uptime. ECC can detect multiple-bit memory errors and locate and correct single-bit errors to keep business applications running smoothly. Intel Matrix Storage Technology with integrated RAID 0, 1, 5, or 10 accelerates data access to support high user productivity, and helps protect business operations by allowing recovery of data.

Intel Matrix Storage Technology is built into the Intel® 82801IR I/O controller hub (ICH9R). The ICH9R also supports both Serial ATA (SATA) at 3 Gb/s with Native Command Queuing for high-speed disk access, and legacy parallel hard drive interfaces for versatility in a high-performance, entry-level server platform.

Cost-effective, Personal Supercomputing

Entry-level Intel server platforms are ideal for building small, cost-effective HPC clusters that create high-performance, personal supercomputing solutions, or workgroup clusters. 64-bit computing, up to 8 GB of high-speed DDR2 memory per processor, and gigabit Ethernet LAN connectivity enable rapid solutions of the large, complex problems found in technical computing.

Personal or workgroup clusters based on the Intel Xeon processor 3000 sequence offer an alternative for scientists and researchers who normally have to share supercomputer or large-scale computing power within a laboratory or a company. Personal or workgroup clusters allow scientists and researchers to be more productive by allowing them to complete tasks on a local cluster more efficiently and conveniently than on larger, shared, computer clusters. In addition to both convenience and productivity, scientists and researchers can gain performance capability to help process their applications or simulations at a fraction of the cost of a full-scale supercomputer.

These new platforms provide energy-efficient performance to help you get high-end performance for thin or thick nodes at low power levels, helping to keep the costs of running your personal cluster low. The Intel Xeon processor 3000 sequence-based servers give you essential server technologies to help improve your reliability and data protection. They can help you solve tough problems for less cost than traditional cluster technologies with the dependability and integrity of Intel's 20-year track record for delivering reliable, high-performance solutions.

Intel® Xeon® Processor-based Platforms Overview

Platform Feature	User Benefit
Intel® Xeon® processor 3300[1] series	▪ Based on Intel® Core™ microarchitecture ▪ 64-bit computing ▪ Up to 12 MB on-die cache ▪ 1333 MHz front-side bus
Intel® Xeon® processor 3100[1] series	▪ Based on Intel Core microarchitecture ▪ 64-bit computing ▪ 1333 MHz front-side bus
Intel® Core™ microarchitecture	▪ Better performance on multiple application types and user environments at a substantially reduced power envelope
1333 MHz front-side bus	▪ Up to 10.6 Gb/s with 1333 MHz
Dual-channel DDR2 memory with ECC	▪ Up to 8 GB dual-channel DDR2 Error Correcting Code (ECC) memory with Intel® 3200 chipset that checks and corrects many common system memory errors
Intel® 64 Architecture[2]	▪ Enables extended memory addressability for server applications
Intel® Virtualization Technology[3] for directed I/O	▪ Enables more operating systems and software to run in today's virtual environments ▪ Developed with virtualization software providers to enable greater functionality and compatibility compared to non-hardware-assisted virtual environments ▪ Intel® Virtualization Technology provides hardware assist to virtualization software, enabling your servers to support both 32-bit and 64-bit operating systems and applications on the same server. Implementing virtualization enables businesses to get the most out of server investment by running more applications on each server.
PCI Express* serial I/O	▪ Industry-standard serial I/O capable of up to 4 Gb/s peak bandwidth with x8 link with Intel 3200 chipset

What is the 3000 Sequence?

At Intel, our processor sequence numbers are intended to help clarify processor features, capabilities and intended usages. Intel offers four processor number sequences for server applications:

- **Intel® Xeon® processor 3000 sequence:** One-processor servers for small business, entry, or first server based on the Intel Xeon processor.
- **Intel® Xeon® processor 5000 sequence:** Two-processor general-purpose, standard high-volume servers, HPC systems, and workstations based on the Intel Xeon processor.
- **Intel® Xeon® processor 7000 sequence:** Greater scalability with 4- to 32-processor enterprise servers based on the Intel Xeon processor.
- **Intel® Itanium® processor 9000 sequence:** Maximum performance and scalability for RISC replacement usage with 2- to 512-processor servers.

Find out more about Intel® Xeon® processors at www.intel.com/xeon

Intel® Xeon® Processor 3300 Series

Second-generation Intel Xeon processor 3300 series is based on Intel's enhanced core microarchitecture, integrates up to 12 MB L2 cache, Intel Virtualization Technology, and Intel 64 Architecture. Intel Xeon processor 3300 series provides significant performance headroom, especially for multi-threaded applications, helps boost system utilization through virtualization and application responsiveness.

Processor Number[1]	CPU Frequency	Cache Size	Front Side Bus	TDP[a]	Intel® Virtualization Technology[3]	Intel® 64 Architecture[2]	Intel® EIST	Package
NEW Intel® Xeon® processor X3380	3.16 GHz	12 MB[b]	1333 MHz	95W	Yes	Yes	Yes	LGA775
NEW Intel® Xeon® processor X3370	3.0 GHz	12 MB[b]	1333 MHz	95W	Yes	Yes	Yes	LGA775
NEW Intel® Xeon® processor L3360	2.83 GHz	12 MB[b]	1333 MHz	65W	Yes	Yes	Yes	LGA775
Intel® Xeon® processor X3360	2.83 GHz	12 MB[b]	1333 MHz	95W	Yes	Yes	Yes	LGA775
Intel® Xeon® processor X3350	2.66 GHz	12 MB[b]	1333 MHz	95W	Yes	Yes	Yes	LGA775
NEW Intel® Xeon® processor X3330	2.66 GHz	6 MB[c]	1333 MHz	95W	Yes	Yes	Yes	LGA775
Intel® Xeon® Processor X3320	2.5 GHz	6 MB[c]	1333 MHz	95W	Yes	Yes	Yes	LGA775
Intel® Xeon® Processor X3230	2.66 GHz	8 MB[d]	1066 MHz	95W	Yes	Yes	Yes	LGA775
Intel® Xeon® processor X3220	2.4 GHz	8 MB[d]	1066 MHz	95W	Yes	Yes	Yes	LGA775
Intel® Xeon® Processor X3210	2.13 GHz	8 MB[d]	1066 MHz	95W	Yes	Yes	Yes	LGA775

[a]Thermal Design Power
[b]Features 6 MB Smart Cache per core pair
[c]Features 3 MB Smart Cache per core pair
[d]Features 4 MB Smart Cache per core pair

Intel® Xeon® Processor 3100 Series

Second-generation Intel Xeon processor 3100 series is based on Intel's enhanced core microarchitecture, integrates a 6 MB L2 cache, Intel Virtualization Technology, and Intel 64 Architecture. Economic, dependable Intel Xeon processor 3100 series-based servers deliver solid computing performance for entry-level servers without compromising affordability.

Processor Number[1]	CPU Frequency	Cache Size	Front-Side Bus	TDP[a]	Intel® Virtualization Technology[3]	Intel® 64 Architecture[2]	Intel® EIST	Package
NEW Intel® Xeon® Processor E3120	3.16 GHz	6 MB	1333 MHz	65W	Yes	Yes	Yes	LGA775
Intel® Xeon® Processor E3110	3.0 GHz	6 MB	1333 MHz	65W	Yes	Yes	Yes	LGA775
NEW Intel® Xeon® Processor L3110	3.0 GHz	6 MB	1333 MHz	45W	Yes	Yes	Yes	LGA775
Intel® Xeon® Processor 3085	3.0 GHz	4 MB	1333 MHz	65W	Yes	Yes	Yes	LGA775
Intel® Xeon® Processor 3075	2.66 GHz	4 MB	1333 MHz	65W	Yes	Yes	Yes	LGA775
Intel® Xeon® Processor 3065	2.33 GHz	4 MB	1333 MHz	65W	Yes	Yes	Yes	LGA775

[a]Thermal Design Power

Breakthrough Performance with Enhanced Intel® Core™ Microarchitecture

Combining high-performance design with power-efficient technologies, the Intel Core microarchitecture is a foundation for new energy-efficient platforms. Intel Core microarchitecture technologies deliver higher performance/watt compared to previous Intel microarchitectures.

Intel® Wide Dynamic Execution. Executes more instructions per clock with as much as a 33 percent wider execution path for each processor core compared to previous Intel microarchitectures.

Intel® Intelligent Power Capability. Manages power consumption of all execution units in the core to help optimize energy usage.

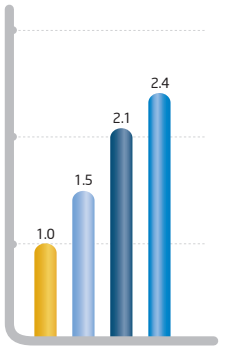
Streaming SIMD Extensions 4 (SSE4). Provides building blocks for delivering expanded capabilities, enhanced performance, and greater energy efficiency for many applications.

Intel® Advanced Smart Cache. A large on-die cache that reduces latency to data, helping to improve performance and power efficiency.

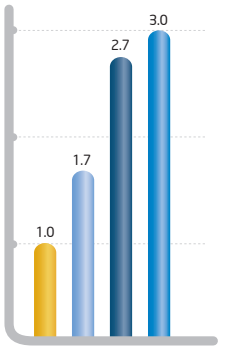
Intel® Advanced Digital Media Boost. Executes complete 128-bit instructions in one clock cycle instead of two cycles, as in previous microarchitectures, for improved performance of streaming instructions (SSE/SSE2/SSE3/SSE4). The enhanced Intel Core microarchitecture features a new Super Shuffle Engine, which improves existing SSE instructions while enabling significant gains on the latest SSE4 instruction set.

Compute-Intensive Throughput

Technical Computing
Est. SPECfp*_rate_base2006

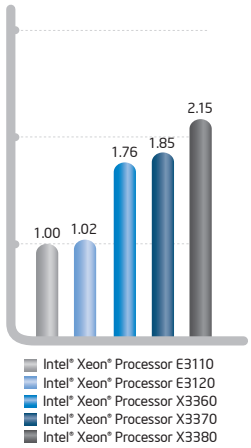


General Purpose
Est. SPECint*_rate_base2006

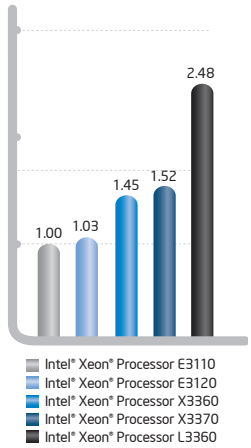


General-Purpose Server

Java* Application Server
SPECjbb* 2005 bops

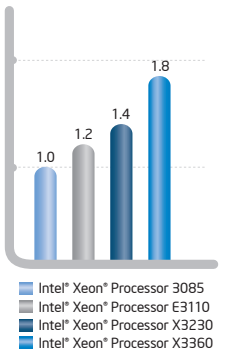


Energy Efficiency
SPECPower_ssj2008 (ssj_ops/watt)

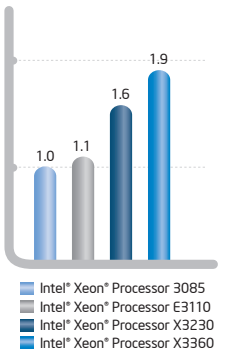


High-Performance Computing (HPC) Server

Fluent* 6.3.33
8/9 workloads



Amber* 9
8 workloads



For more information on performance, please visit www.intel.com/performance

Server and HPC Performance

- **Benchmark Description for SPECcpu*2006 suite (SPECint*_rate_base2006 & SPECfp*_rate_base2006):** SPEC CPU2006 is the industry-adopted, CPU-intensive benchmark which stresses the system processor(s), memory subsystem, and compiler. Derived from 29 real user applications, CPU2006 provides a comparison across the widest practical range of hardware reporting a geometric mean ratio score on a baseline compiled binary.
- **Best 1-socket SPECfp*_rate_base2006 Intel internal measurement results as of January 7, 2008:**
  - Intel® Pentium® D Processor platform (score 19.8): Fujitsu-Siemens PRIMERGY* RX100S4 server platform using one Intel Pentium D processor 945 3.40GHz, 4MB L2 cache, 800MHz bus, 8GB memory (4x2GB DDR2 PC4200E, 2-rank, CL4, ECC), 64-bit SUSE LINUX* Enterprise Server 10 2.6.16.21-08smp, Intel® C++ Compiler for IA32/EM64T version 9.1. Source www.spec.org/cpu2006/results/res2007q3/cpu2006-20070619-01288.html.
  - Intel® Xeon® Processor 3085 platform (score 30.5): Dell* PowerEdge* R200 using Intel Xeon processor 3085 (3.00 GHz, 4 MB L2 cache, 1333 MHz bus), 8 GB (4x 2 GB DDR2-800), 64-bit SuSE* LINUX Enterprise Server 10, Intel® C++ and Fortran Compiler for LINUX32 and LINUX64 version 10.1. Source: www.spec.org/cpu2006/results/res2007q4/cpu2006-20071210-02855.html.
  - Intel® Xeon® Processor X3230 platform (score 42.2): Acer* Altos* G330Mk2 using Intel Xeon processor X3230 (2.66 GHz, 8 MB L2 cache, 1066 MHz bus), 8 GB (4x 2GB DDR2-800), 64-bit SuSE* LINUX Enterprise Server 10, Intel® C++ Complier and Fortran Compiler for LINUX* version 10.1. Source: www.spec.org/cpu2006/results/res2007q4/cpu2006-20071203-02758.html.
  - Intel® Xeon® Processor X3360 platform (score 47.5): Intel® 3210 Chipset-based internal server using Intel Xeon processor X3360 (2.83 GHz, 12 MB L2 cache, 1333 MHz bus, 45nm), 8 GB (4x 2 GB DDR2-800), 64-bit SuSE* LINUX Enterprise Server 10, Intel® C++ and Fortran Compiler for LINUX32 and LINUX64 version 10.1. Source: TR#842 as of 7 Jan 08.
- **Best 1-socket SPECint*_rate_base2006 published and Intel internal measurement results as of January 7, 2008:**
  - Intel® Pentium® D Processor platform (score 20.6): Fujitsu-Siemens* Primergy* RX100S4 using Intel Pentium D processor 945 (3.40 GHz, 2x2 MB L2 cache, 800 MHz bus), 8 GB (4x 2 GB DDR2 PC4200E, 2-rank, CL4, ECC), 64-bit SuSE* LINUX Enterprise Server 10 2.6.16.21-08smp, Intel® C++ Compiler for IA32/EM64T version 9.1. Source: www.spec.org/cpu2006/results/res2007q3/cpu2006-20070619-01287.html.
  - Intel® Xeon® Processor 3085 platform (score 34.9): Dell* PowerEdge* R200 using Intel Xeon processor 3085 (3.00 GHz, 4 MB L2 cache, 1333 MHz bus), 8 GB (4x 2 GB DDR2-800), 64-bit SuSE* LINUX Enterprise Server 10, Intel® C++ Compiler for LINUX32 and LINUX64 version 10.1. Source: www.spec.org/cpu2006/results/res2007q4/cpu2006-20071210-02852.html.
  - Intel® Xeon® Processor X3230 platform (score 55.1): Acer* Altos* G330Mk2 using Intel Xeon processor X3230 (2.66 GHz, 8 MB L2 cache, 1066 MHz bus), 8 GB (4x 2GB DDR2-800), 64-bit SuSE* LINUX Enterprise Server 10, Intel® C++ Complier Compiler for LINUX* version 10.1. Source: www.spec.org/cpu2006/results/res2007q4/cpu2006-20071203-02759.html.
  - Intel® Xeon® Processor X3360 platform (score 63.4): Intel 3210 Chipset-based internal server using Intel Xeon processor X3360 (2.83 GHz, 12 MB L2 cache, 1333 MHz bus, 45nm), 8 GB (4x 2 GB DDR2-800), 64-bit SuSE* LINUX Enterprise Server 10, Intel® C++ Compiler for LINUX32 and LINUX64 version 10.1. Source: TR#842 as of 7 Jan 08.
- **Benchmark Description for SPECjbb*2005:** SPEC Java Business Benchmark 2005 (jbb2005). Written in Java, this multi-threaded benchmark emulates an order processing environment in a company with multiple warehouses serving multiple customers. Measures average transaction throughput of a heavily loaded server. Performance reported in Business Operations per Second (BOPS).
- **Best 1-socket SPECjbb*2005 published as of March 2009 and Intel internal measurements as of July 2008:**
  - Intel® Xeon® Processor E3110 platform (score 98,241 SPECjbb2005 bops): Intel 3210 Chipset-based server platform using Intel Xeon processor E3110 (3.00 GHz, 1333 MHz bus, 6MB L2 cache), 8192 MB RAM, Microsoft Windows* Server 2008 Enterprise x64 (64-bit), BEA JRockit* 6.0 (R27.5.0-110-94909-1.6.0_03-20080214-1558-windows-x86_64). Source: TR#934 as of July 08.
  - Intel® Xeon® Processor E3120 platform (score 100,184 SPECjbb2005 bops): Intel® 3210 Chipset-based server platform using Intel Xeon processor E3120 (3.16 GHz, 1333 MHz bus, 6MB L2 cache), 8192 MB RAM, Microsoft Windows* Server 2008 Enterprise x64 (64-bit), BEA JRockit* 6.0 (R27.5.0-110-94909-1.6.0_03-20080214-1558-windows-x86_64). Source: TR#934 as of July 08.
  - Intel® Xeon® Processor X3360 platform (score 172,903 SPECjbb2005 bops): Intel® 3210 Chipset-based server platform using Intel Xeon processor X3360 (2.83 GHz, 1333 MHz bus, 12MB L2 cache), 8192 MB RAM, Microsoft Windows* Server 2008 Enterprise x64 (64-bit), BEA JRockit* 6.0 (R27.5.0-110-94909-1.6.0_03-20080214-1558-windows-x86_64). Source: TR#934 as of July 08.
  - Intel® Xeon® Processor X3370 platform (score 181,467 SPECjbb2005 bops): Intel® 3210 Chipset-based server platform using Intel Xeon processor X3370 (3.00 GHz, 1333 MHz bus, 12MB L2 cache), 8192 MB RAM, Microsoft Windows* Server 2008 Enterprise x64 (64-bit), BEA JRockit* 6.0 (R27.5.0-110-94909-1.6.0_03-20080214-1558-windows-x86_64). Source: TR#934 as of July 08.
  - Intel® Xeon® Processor X3380 platform (score 211,144 SPECjbb2005 bops): Intel® 3210 Chipset-based server platform using Intel Xeon processor X3380 (3.16 GHz, 1333 MHz bus, 12MB L2 cache), 8192 MB RAM, Microsoft Windows* Server 2008 Enterprise x64 (64-bit), BEA JRockit* 6.0 (R27.5.0-110-94909-1.6.0_03-20080214-1558-windows-x86_64). Source: www.spec.org/jbb2005/results/res2009q1/jbb2005-20090220-00576.html.
- **Benchmark Description for SPECPower_ssj2008:** New industry-standard benchmark for measuring energy efficiency of volume servers using a Server-side Java* application (similar to SPECjbb*2005). The graduated workload measures AC system power consumption in relation to performance and is reported as overall ssj_ops/watt result.

  Best 1-socket SPECPower_ssj2008 published as of March 2009 and Intel internal measurements as of July 2008:
  - Intel® Xeon® Processor E3110 platform (score 513 SPECPower_ssj2008 ops/watt): Intel® 3210 Chipset-based server platform using Intel Xeon processor E3110 (3.0 GHz, 1333 MHz bus, 6MB L2 cache), 4096 MB RAM, Microsoft Windows* Server 2008 Enterprise x64 SP2 (64-bit), BEA JRockit* 6.0 (R27.5.0-110-94909-1.6.0_03-20080214-1558-windows-x86_64). Source: TR#945 as of July 08.
  - Intel® Xeon® Processor E3120 platform (score 529 SPECPower_ssj2008 ops/watt): Intel® 3210 Chipset-based server platform using Intel Xeon processor E3120 (3.16 GHz, 1333 MHz bus, 6MB L2 cache), 4096 MB RAM, Microsoft Windows* Server 2008 Enterprise x64 SP2 (64-bit), BEA JRockit* 6.0 (R27.5.0-110-94909-1.6.0_03-20080214-1558-windows-x86_64). Source: TR#945 as of July 08.
  - Intel® Xeon® Processor X3360 platform (score 746 SPECPower_ssj2008 ops/watt): Intel® 3210 Chipset-based server platform using Intel Xeon processor X3360 (2.83 GHz, 1333 MHz bus, 12MB L2 cache), 4096 MB RAM, Microsoft Windows* Server 2008 Enterprise x64 SP2 (64-bit), BEA JRockit* 6.0 (R27.5.0-110-94909-1.6.0_03-20080214-1558-windows-x86_64). Source: TR#945 as of July 08.
  - Intel® Xeon® Processor X3370 platform (score 782 SPECPower_ssj2008 ops/watt): Intel® 3210 Chipset-based server platform using Intel Xeon processor X3370 (3.0 GHz, 1333 MHz bus, 12MB L2 cache), 4096 MB RAM, Microsoft Windows* Server 2008 Enterprise x64 SP2 (64-bit), BEA JRockit* 6.0 (R27.5.0-110-94909-1.6.0_03-20080214-1558-windows-x86_64). Source: TR#945 as of July 08.
  - Intel® Xeon® Processor L3360 platform (score 1,273 SPECPower_ssj2008 ops/watt): Fujitsu Siemens PRIMERGY* TX150S6 using Intel Xeon processor L3360 (2.83 GHz, 1333 MHz bus, 12MB L2 cache), 4096 MB RAM, Microsoft Windows* Server 2008 Enterprise x64 SP2 (64-bit), BEA JRockit* 6.0 (P28.0.0-8-109238-1.6.0_05-20090130-1408-windows-x86_64). Source: www.spec.org/power_ssj2008/results/res2009q1/power_ssj2008-20090220-00115.html.
- **Benchmark Description for Fluent*:** Fluent is a commercial engineering application used to model computational fluid dynamics. The benchmark consists of 9 standard workloads organized into small, medium and large models. These comparisons use all but the largest of the models which does not fit into the 8GB of memory available on the platforms. The Rating, the default Fluent metric, was used in calculating the ratio of the platforms by taking a geometric mean of the 8 workload ratings measured.
- **Best 1-socket Fluent* version 6.3.33 (8 of the 9 standard, jobs/day) benchmark results as of 7 Jan 2008:**
  - Intel® Xeon® Processor 3085 platform (score 1611.1/avg sys watts 131; E3110 score 1874/avg sys watts 106.6; X3230 score 2294.3/avg sys watts 192.3; X3360 score 2976/avg sys watts 128.3): Intel® 3210 Chipset-based server platform using Intel® Xeon® Processor 3085 (3.00 GHz, 4 MB cache, 1333 FSB), E3110 (3.00 GHz, 6 MB cache, 1333 FSB, 45nm), X3230 (2.66 GHz, 8 MB cache, 1066 FSB), or X3360 (2.83 GHz, 12 MB cache, 1333 FSB, 45nm), 4x 2 GB DDR2-800 ECC CL5 DIMMs, 120 GB SATA HDD, Red Hat* Enterprise LINUX 64-bit. Source: Intel internal measurements TR#823/844.
- **Benchmark Description for Amber*:** A package of molecular simulation programs. The workload measures the number of problems solved per day (PS) using eight standard molecular dynamic simulations. See amber.ch.ic.ac.uk/amber9.bench1.html for more information.
- **Best 1-socket Amber* version version 9 (8 standard, PS/day) benchmark results as of 7 Jan 2008:**
  - Intel® Xeon® Processor 3085 platform (score 305.5/avg sys watts 134; E3110 score 329.3/avg sys watts 109.5; X3230 score 461.4/avg sys watts 206.1; X3360 score 575.4/avg sys watts 139.8): Intel® 3210 Chipset-based server platform using Intel Xeon Processor 3085 (3.00 GHz, 4 MB cache, 1333 FSB), E3110 (3.00 GHz, 6 MB cache, 1333 FSB, 45nm), X3230 (2.66 GHz, 8 MB cache, 1066 FSB), or X3360 (2.83 GHz, 12 MB cache, 1333 FSB, 45nm), 4x 2 GB DDR2-800 ECC CL5 DIMMs, 120 GB SATA HDD, Red Hat* Enterprise LINUX 64-bit. Source: Intel internal measurements TR#823/844.

SPECint*2006 and SPECfp*2006 benchmark tests reflect the performance of the microprocessor, memory architecture and compiler of a computer system on compute-intensive, 32-bit or 64-bit applications. SPEC benchmark tests results for Intel microprocessors are determined using particular, well-configured systems. These results may or may not reflect the relative performance of Intel microprocessor in systems with different hardware or software designs or configurations (including compilers). Buyers should consult other sources of information, including system benchmarks, to evaluate the performance of systems they are considering purchasing. SPECcpu*2006 suite including SPECint2006 and SPECfp2006 are registered trademarks of the Standard Performance Evaluation Corporation (SPEC).

[1] Intel® processor numbers are not a measure of performance. Processor numbers differentiate features within each processor series, not across different processor sequences. See www.intel.com/products/processor_number for details.

[2] 64-bit computing on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel® 64 architecture. Performance will vary depending on your hardware and software configurations. Consult with your system vendor for more information.

[3] Intel® Virtualization Technology requires a computer system with a processor, chipset, BIOS, virtual machine monitor (VMM) and applications enabled for virtualization technology. Functionality, performance or other virtualization technology benefits will vary depending on hardware and software configurations. Virtualization technology-enabled BIOS and VMM applications are currently in development.

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Relative performance for each benchmark is calculated by taking the actual benchmark result for the first platform tested and assigning it a value of 1.0 as a baseline. Relative performance for the remaining platforms tested was calculated by dividing the actual benchmark result for the baseline platform into each of the specific benchmark results of each of the other platforms and assigning them a relative performance number that correlates with the performance improvements reported.

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